

Specification Amendments

Append to paragraph (0023) on page 2 of the Specification:

It will be understood by one skilled in the art that tanks addressed under the teaching of this invention are commonly both supported and connected for fluid flow at their ends or boss. It will further be understood by one skilled in the art that forces or moments that act on one end of the tank must be transmitted by the stiffness of the tank to the other end of the tank or the shape of the tank will be proportionally distorted.

It will be understood by one skilled in the art that tank characteristics addressed under the teaching of this invention can vary widely in volume, proportions of length to diameter, internal pressure, and the external loads that distort the shape of the tank. For one example, tanks for cryogenic gases for rocket engines may be long and slender with extreme pressures for cryogenic fluids with exterior imposed moments that are proportionally minor within the bounds of the stiffness of the thick-walled tank, but with large compressive axial loads that must be transmitted to the structural frame of the rocket. For a second example, tanks for chemical fluid storage used for aircraft transport may be larger in diameter than their length with large imposed forces generated during turbulent flights and transmitted to the tank from flexing of the airframe.

It will further be understood by one skilled in the art that varying tank characteristics impose variations in dimensional parameters of the moment and compression resisting slip joint of this invention such that dimensional ranges cannot be quantified within the specification of this current invention for (1) the thickness of the cylindrical pipe, (2) the thickness of the strut, (3) the length of the congruent slip joint surfaces to achieve required moment resistance, (4) the length of slip joint surfaces providing free axial relative positional displacement until meeting compressive restraint by abutting end surfaces, and (5) the diameter of the cylindrical pipe and strut. It will further be understood by one skilled in the art that tanks with larger imposed distorting moments will require longer congruent slip joint surfaces and greater thickness and diameter of pipe and strut. It will further be understood by one skilled in the art that tanks with larger imposed axial compressive loads on the abutting end surfaces will require greater thickness and diameter of pipe and strut.

Append to paragraph (0027) page 2 of the Specification, the detailed description of Fig. 1.

In Fig. 1 the moment arrows 7 indicate forces in the plane of the stiffener axis. In physics and in structural engineering the commonly understood definition of a moment is a force multiplied by its lever arm. In Fig. 1 moment force arrows 7 are shown to be acting on opposite ends of the composite tank stiffener and as shown are only resisted by the congruent wall surfaces 19 of the slip joint 2. Thus to prevent the distortion of the shape of the tank by external moment arrows 7, the teaching of this current invention discloses a composite tank stiffener that resists these moment forces 7.